

A Getting Started

Things like cost, speed and rainfall are rates.
The unit for a rate contains the word 'per'.

For instance : The unit for cost is dollars *per* item.
The unit for speed is km *per* hour.
The unit for rainfall is mm *per* year.

- 1 Match the rate with the unit.

Rate	Unit
speed	◆ kilowatts per hour
growth rate	◆ kilometres per hour
fuel consumption	◆ kilometres per litre
paint coverage	◆ dollars per pound
electricity use	◆ centimetres per year
exchange rate	◆ square metres per litre

- 2 Think of a possible unit for these rates.

- a) weight loss per
- b) heart rate per
- c) pay rate per
- d) mail sorting per

- 3 Jason gets paid \$5.50 per hour to baby-sit his younger sister. How much does he get paid for $3\frac{1}{2}$ hours of baby-sitting?

- 4 On a paint tin is printed '1 L covers 15 square metres'. How many square metres can be covered with 2.5 L of this paint?

- 5 Our car used a full tank of petrol (40 L) to drive 520 km from Hamilton to Wellington. Calculate our car's fuel consumption in kilometres per litre.

- 6a) Mr Watson exchanged 250 NZ dollars for 17500 yen. At this rate, how many yen do you get for one NZ dollar?

- b) How many yen does Vicki Watson get for \$40?

B Speed

Example :

A tourist bus takes 6 hours to travel from Christchurch to Dunedin, which is a distance of 372 km.

- a) What is the speed of the bus in kilometres per hour (km/h)?
b) At this speed, how far does the bus travel in 15 minutes?

Working :

- a) 372 km in 6 hours, that is $372 \div 6 = 62$ km in 1 hour.
Speed = 62 km/h
b) 15 minutes is $\frac{1}{4}$ of an hour.
distance travelled = $\frac{1}{4}$ of 62 km = 15.5 km.

- 1 A plane takes 5 hours to fly 4620 km.

- a) What is the speed of the plane?

- b) At this speed, how far does the plane fly in 20 minutes.

- 2 It took Rewi half an hour to bike 8 km.
What was Rewi's speed in km per hour?

- 3 At an average speed of 100 km/h, what distance would be covered in ...

- a) 15 minutes?

- b) 6 minutes?

- 4 Driving at an average speed of 80 km/h how long will it take us to drive 520 km from Hamilton to Wellington?

- 5 Kara took 20 minutes to walk the 2 km to Emma's house.

- a) If Kara kept walking at the same speed, how far would she have walked in 1 hour?

..... km

- b) Kara ran back home, covering the 2 km in 15 mins. What was Kara's speed on the way home?

..... km/hr

